

## **EV Everywhere Grand Challenge**

U.S. Department of Energy, Energy Efficiency and Renewable Energy

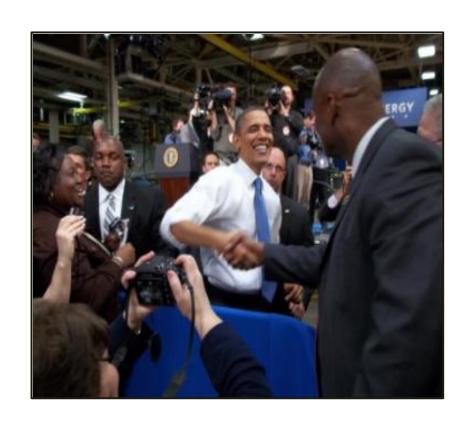
Dr. David Danielson, Assistant Secretary



### **EV Everywhere Grand Challenge**

#### "Big Hairy Audacious Goal":

Enable U.S. companies to produce plug-in electric vehicles that are as affordable and convenient as today's gaspowered vehicles by 2022



President Obama announced the EV Everywhere Challenge on March 7, 2012



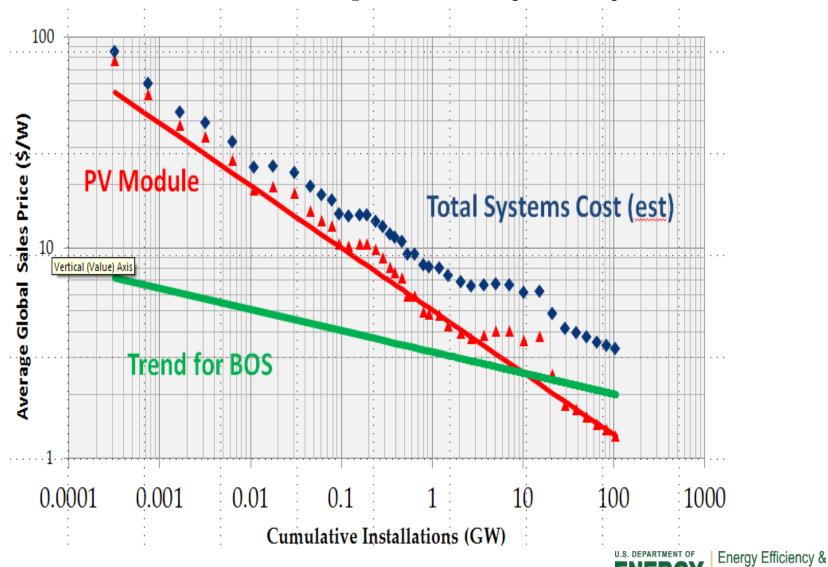
### **SunShot Grand Challenge**

#### "Big Hairy Audacious Goal"

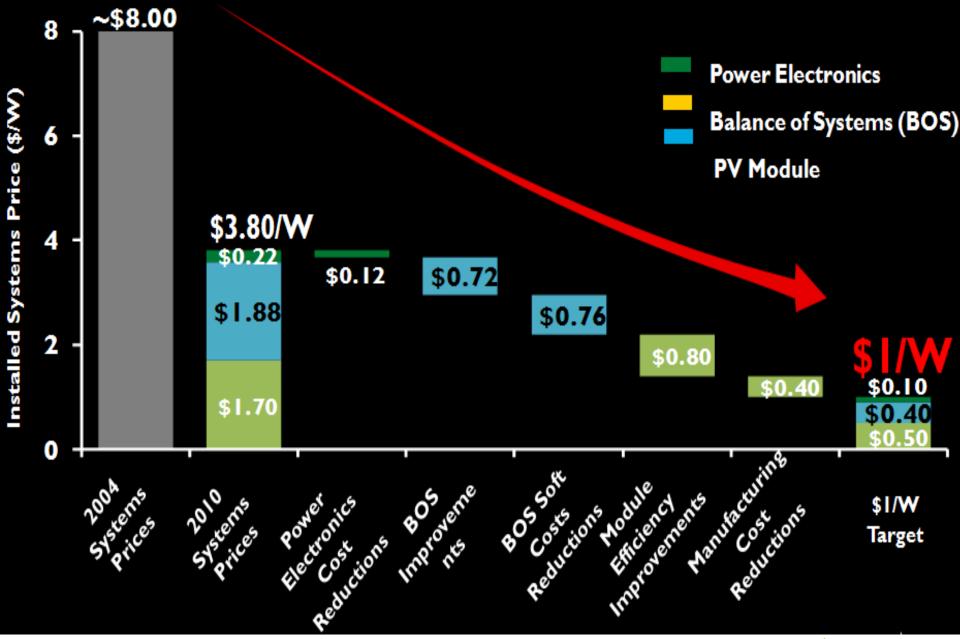
To achieve unsubsidized cost parity for solar power with traditional sources of electricity by 2020



### **Balance of Systems (BOS)**



Renewable Energy



# Far Reaching Impacts of SunShot - 2 years later -

- ✓ Set very aggressive goals for module and BOS costs that have spurred innovation at all companies.
- ✓ Recognized importance of reducing BOS and soft costs.
- ✓ Recognized the importance of understanding grid impacts at high penetration.



#### **EV-Everywhere Impacts? Who knows?**

Beyond Li-ion battery technology?

Pack-level battery innovation?

Disruptive approaches to fast-charge/battery-swap?

Innovations for grid stability for fast charge?

Wide bandgap crystal growth?

Non-economic drivers/psychological factors of PEV consumer adoption?

New non-rare earth magnet/motor designs?

Workplace Charging Challenge?

New vehicle ownership/usage models?

**HOV** Access for EV's?

Autonomous vehicle control to enable ultra-lightweight PEV's?

